

ESSAY REVIEW

Cryptozoology and the Troubles with “Skeptics” and Mainstream Pundits

Abominable Science by Daniel Loxton and Donald R. Prothero. Columbia University Press, 2013. xvi + 411 pp. \$29.95 (hardcover). ISBN 978-0231153201.

This book is superbly produced by a prominent university press. It is also intellectually shoddy, even dishonest. Science is described in naïve shibboleths that bear no relation to how science is actually done. The chapters about individual cryptids are chock-full of misrepresentation and evasion of the best evidence.

Abominable Science is unsatisfactory in ways that are all too common with self-styled “skeptics”:

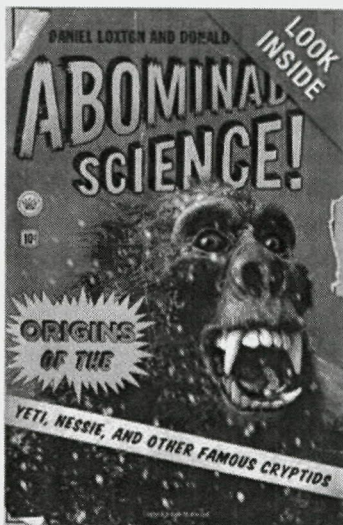
- They assume authority but reveal ignorance.
- Their underlying agenda is scientism, the belief that whatever contemporary science says is true.
- They claim to speak for “science” but get much wrong about science and its history.
- They debunk instead of being skeptical.
- They do not engage honestly with the strongest evidence.
- They imply guilt by association (all anomalists are “flat-earthers”) and thereby lapse into irrelevance and *ad hominem* distortions.

In addition, *Abominable Science* is extraordinarily replete with illogic. Loxton and Prothero purport to examine the cases of 5 cryptids: Bigfoot (Chapter 2), Yeti (Chapter 3), Nessie (Chapter 4), sea serpents (Chapter 5), Mokele Mbembe (Chapter 6). Chapter 1 is about whether cryptozoology is science or pseudo-science, and the concluding Chapter 7 asks why people believe in monsters.

When I expanded the marginal notes I had made in the book while reading it, the result was some 20,000 words, far too much even for an Essay Review. So here I will concentrate on what the book gets wrong in general and say just a little about the distorted discussions of specific cryptids. The only reviews with any significant detail about the chapters on individual cryptids are at Amazon.com, by fans of Bigfoot and of Nessie. Two^{1,2} deal with the numerous errors in Chapter 2, taking, respectively, 1,800 and 1,500

words to do so; a third³ takes more than 3,000 words to list some of the errors in Chapter 4. Loxton has responded to these in his blog.^{4,5}

Since this review will not be kind, my biases ought to be made plain. For more than three decades I've worked in science studies (the usual acronym is STS, for Science & Technology Studies), with particular focus on controversies over scientific unorthodoxies, and my books in that genre (Bauer 1984, 1986, 1992, 2001a, 2001b, 2007, 2012a) have enjoyed uniformly favorable reviews.⁶ I also happen to believe that the evidence for the existence of "sea serpents" is highly plausible and for Nessies almost completely convincing—and I came to have as a good friend Tim Dinsdale, whose unique film of a Nessie features in most controversies about Loch Ness Monsters (Dinsdale 2013). On the other hand, I would be quite surprised if Sasquatch turned out to be real—though I am more prepared for that possibility after reading Bindernagel (2010); and I would be enormously surprised if anything like Mokele Mbembe turned out to be real. I'm agnostic as to Yeti.



Illogic, Non Sequitur, Over-Generalization, and Irrelevance

The whole argument of *Abominable Science* boils down to the erroneous assertion that "highly unlikely" equals impossible: "This [fossil] record is good enough that the absence of evidence *is* evidence of absence" (p. 27).

By contrast, Loxton and Prothero are quite willing to adduce mere speculation as support for their own views, for example, estimates of how many species remain to be discovered (p. 21 ff.): as though the history of discoveries up to now could be extrapolated validly with a possible error of less than ± 1 species.

"Most of the caveats and issues that apply to . . . [the creatures discussed in this book] also apply to all cryptids, so discussing them all would be largely redundant" (p. xiv). But Nessie could exist without Bigfoot being real, and vice versa. There is no photographic or sonar evidence for sea serpents, yet there is for Nessies. And so on. There are crucial differences galore between the many alleged cryptids. Each is an individual case, and in each one the devil is in the details.

Loxton writes that cryptozoologists evaluate eyewitness accounts in part according to the observer's experience, presuming that people familiar with seals are more reliable about seals and not-seals than those who have never seen a seal, for example (p. 232). "Not so fast," the reader is warned about this perfectly rational approach: Those who claim to have seen sea serpents, as well as "ESP researchers" [how are they relevant?], are "not randomly selected average observers," they are a tiny proportion of the Earth's population; and (citing Michael Shermer) "The Law of Large Numbers guarantees that one-in-a-million miracles happen 295 times a day in America." How is that supposed to undercut the sensible approach of paying more attention to experienced observers than to naïve ones? By also remembering that "[o]penness to first-person testimony" makes for gullibility (p. 3)? Should that vitiate the use of witnesses in the legal system?

Huge swaths of the book are taken up with suggestions that modern eyewitnesses misinterpret what they see under the influence of folklore, legend, and mythology about imaginary creatures. All that is quite pointless: If remarkable creatures like Yeti exist, they would surely have found their way into folklore and myth; indeed, myths about such creatures might even suggest their possible existence (Bayanov 1982).

Descriptions abound, page after page, of "documented misidentifications" and of all the things that can lead to misidentification (pp. 233–239). Because some reports are mistakes, therefore all reports have been mistakes?

That does seem to be the intended implication: "Imagine that boat wakes fooled only . . . 1 in 100 million. Wakes and waves need convince only a handful of people a year to become a major part of monster lore!" (p. 239; *exclamation mark in original*).

The same level of illogic is present ad nauseam throughout the book. There are innumerable lengthy descriptions of frauds and hoaxes as well as mistakes, as though that could be extrapolated to mean that everything not yet recognized as fraud or hoax must also have been such.

"[T]he existence of most of the cryptids discussed in this book . . . goes against everything we know from biology, geology, and other sciences" (p. 10)—"everything"? "[M]any hunters shoot first and ask questions later" (p. 15)—"many"? Such overgeneralization is accompanied by pervasive and unseemly self-praise, implicit when not explicit: "Skeptics are in the business of soberly considering strange claims" (p. 69). This book hardly exemplifies that assertion.

For these authors, the only unifying principle for identifying pseudoscience is that the subject is anathema to them. As a result, they persistently lump together topics that have no substantive commonality, for instance "considering UFOs, ghosts, Bigfoot, telekinesis, faith healing, and similar

elusive, paranormal phenomena" (p. 231); or "in regard to sea serpents—and, indeed, to paranormal claims in general" (p. 251). What is paranormal about unidentified flying objects or hominid apes or sea serpents? That a reported object may not actually exist doesn't make it paranormal, nor is a claim of its natural existence a paranormal claim. Then again, Loxton and Prothero are puzzled that so many people "believe" in UFOs or give credence to Holocaust deniers (p. 9); what's the connection between those two matters, except that both are anathema to these authors?

"Cryptozoology thrives on the failure to distinguish observations from conclusions" (p. 252) actually well describes the approach taken in this book. The conclusions came first, namely, that all paranormal claims including cryptids are mistaken: "The truth is that sea serpents are shape-shifters. . . . They are . . . creatures of culture, not of nature" (p. 256). The authors pride themselves on being scientific, yet perpetrate such vapid postmodernist emissions as this: "In all environments—in fiction, in the cryptozoological literature, and in the oceans of the mind—sea monsters teem and vary and return to type, as unpredictable, as unique, and yet as familiar as the waves themselves" (p. 256).

Nevertheless, reality and common sense break through in a few places: "It's just barely possible that genuine sightings of new creatures may be among the evidence" (p. 236). So why take up more than 400 pages attempting to deny it?

If one wanted to critique cryptozoology in an intellectually honest and sound manner, one would seek to address what the best evidence appears to be for each cryptid. This book doesn't do that, it does the very opposite, as when it brushes aside (pp. 159, 170–173) the copious sonar data from Loch Ness⁷. Cryptozoologists are concerned not only with such highly improbable cryptids as Mokele Mbembe, they also pursue such not-very-improbable possible "survivors" as the Eastern panther in the USA and the thylacine in Australia. The 13 volumes of the journal *Cryptozoology* include items about the identification *by cryptozoologists* of some cryptids as known species, the *ri* of New Guinea as a dugong and the *onza* of Mexico as a puma. *Abominable Science*, however, chooses to discuss only cryptids representing the very least probable of the seven categories in Greenwell's (1985) classification of cryptozoology.

Ignorance about Science

Abominable Science suffers from many of the common misunderstandings about how science is actually done: that "the scientific method" delivers trustworthy results, that falsifiability is a criterion for being scientific, that science can be believed because it is self-correcting. The first two were

discarded by STS scholars decades ago, while the last is self-trashing: How could one tell whether self-correction has ever attained its final resolution (Bauer 1992)? As David Goodstein (1992) remarked *two decades ago* in a lead book review in *Science*, "I would strongly recommend this book to anyone who hasn't yet heard that the scientific method is a myth. *Apparently there are still lots of those folks around* [even 20 years later!]" (emphasis added).

Those folks evidently include Loxton and Prothero, who make such ignorant statements as:

- The criteria for science are "testability, falsifiability, peer review, and rejection of ideas when they do not pan out" (p. 8).
— but string theory fails the first two; Mendelian genetics and continental drift are just the best-known instances of things rejected for decades that *did* later pan out; and HIV/AIDS theory has remained hegemonic even though it didn't pan out (Bauer 2007) and still doesn't.⁸
— As to peer review (Bauer 2013a), the best short comment is from Richard Horton (2003), former editor of *The Lancet*: "Peer review . . . is simply a way to collect opinions from experts in the field. Peer review tells us about the acceptability, not the credibility, of a new finding";
- "the hard-nosed requirements of the scientific community, according to which every statement has to meet the most rigorous standards of scientific scrutiny" (p. xiv).
- "Scientists are open to any and every idea that can be proposed, no matter how crazy it may sound" (p. 5). Readers of the *Journal of Scientific Exploration* are among those who have the plain evidence that disproves this assertion.
- "Scientific hypotheses must always be tentative . . . and they never reach the status of 'final truth'" (p. 8)—Do scientists and people claiming to speak for science never make dogmatic assertions?
- Scientists are "obligated" (p. 6) to accept claims only after "the process of repeated testing and possible falsification" (p. 5);
- "many scientific experiments are run by the double-blind method" (p. 6)
— not in chemistry or physics, they aren't, maybe sometimes in medicine or psychology.
- "If it doesn't agree with experiment, it's wrong" (p. 6)
— Nonsense. Please read p. 20 ff. in Bauer (1992): Theoreticians are often skeptical or dismissive of experimental results, and sometimes they turn out to have been rightly skeptical.
- Modifying hypotheses by *ad hoc* adjustments as evidence comes in is "universally regarded as signs of failure" (p. 12).
— To the contrary: Imre Lakatos (1976) is generally credited with pointing out that this is precisely how scientific theories become better. It's a process of letting the evidence progressively shape beliefs, of theories always being tentative, which elsewhere in *Abominable Science* is said to be a criterion of proper science.

- "Most scientific studies require dozens to hundreds of experiments or cases, and detailed statistical analyses" (p. 13).
- "In the testing of medicines . . . there must be a control group, which receives a placebo." (p. 13)
 - except, of course, in the many situations where it would be unethical to withhold a potential benefit from seriously ill people. Moreover, drug companies usually prefer to compare new drugs with those of competitors, not to mention the various other tricks employed to make bad drugs seem good (Goldacre 2012).

Further examples of ignorance about matters of science abound throughout the book.

The authors are right that cryptozoology is not science, but they are wrong about why this is the case. As I explained three decades ago in a book cited in *Abominable Science* (Bauer 1986), science is accredited, organized, official, disciplined, and bureaucratic, whereas cryptozoology is none of those. Science looks cautiously, respectably, risk-aversely into the known unknown, whereas cryptozoology and anomalistics in general aspire to delve indiscreetly, irreverently, recklessly, even scandalously into the almost-entirely-unknown unknown.⁹

But the whole question of whether cryptozoology is science is a red herring—unless one believes, erroneously, that science is the only path to truth, a belief (scientism) that is characteristic of "skeptics." Consequently, they almost invariably have a bee in their bonnet about religion. A survey (Leiter 2002) revealed that many members of one "Skeptics" group had rebelled against a firm religious upbringing, exemplifying the general rule that when true believers lose their faith, they swing to the other side of the pendulum—they do not become judicious, unbiased, genuinely skeptical of fanatical beliefs, they become fanatical opponents of what they formerly believed. The phenomenon is well-known in politics: The most dedicated anti-Communists were such ex-Communists as Whittaker Chambers and Arthur Koestler. At Loch Ness, the most determined resident debunkers are former Nessie hunters. At any rate, throughout *Abominable Science* creationism is continually dragged in for criticism even though it is no part of cryptozoology.

Ignorance about Cryptozoology

As regards cryptozoology itself, the book's Foreword is ludicrously out of order in calling this volume "the defining work on cryptozoology of our generation" (p. xi). Apart from the book's general faults detailed here, and the many errors about individual cryptids, much more defining of cryptozoology are *Cryptozoology A to Z* (Coleman and Clark 1999), a

2-volume *Guide to Cryptozoology* (Eberhart 2002), and an *Encyclopedia* (Newton 2005) as well as the works of Karl Shuker¹⁰ and Loren Coleman¹¹ (who also manages the only extant museum of cryptozoology).¹²

"Skepticism"

The most blatant dishonesty of *Abominable Science* is its self-description as a work of scientific skepticism. The classical norms of science (Merton 1942) include "organized skepticism" *directed toward claims made within science*. The self-styled "Skeptics" groups, by contrast, are not at all skeptical about claims made within science; rather, they take for granted what contemporary science has to say, apparently unaware that the history of science is a long story of trials *and errors*, with the mainstream consensus periodically being found wanting and erstwhile anathema becoming mainstream dogma. Thus John Ziman, FRS, physicist turned STS scholar, pointed out that perhaps 90% of published research articles in physics turn out to need modification or even to be quite wrong (Ziman 1978).

The self-styled "Skeptics" organizations do not practice skepticism at all. They are concerned only to debunk what they themselves do not believe. As Marcello Truzzi (1987) pointed out, self-styled "Skeptics" are actually *pseudo-skeptics* (as I try to emphasize by persistently using scare quotes). *Abominable Science* certainly reveals its authors to be dogmatists of a high order; for example, extrasensory perception is said to be "demonstrably false . . . pseudoscientific" (p. 9), with not even a reference cited to that claimed demonstration.

Loxton describes the "tradition that I work in: . . . scientific skepticism, or the critical examination of popular beliefs, especially of paranormal claims" (p. 204). His footnote to that statement lets the cat out of the bag: "centuries of earlier thinkers tried their hand at similar *debunking* projects" (p. 370, note 70; emphasis added).

If *Abominable Science* were a skeptical work, it would merely point out that the evidence for the existence of these cryptids is short of proof, and even Nessie fans like myself would not disagree. The evidence is sufficient *for me*, in part because I knew Dinsdale and a number of eyewitnesses, but I understand that this does not constitute objective, "scientific" proof. So this book could be very short indeed. Instead, here are more than 400 pages sneering at insufficient evidence and pretending that this constitutes "scientific" disproof. Since that case cannot be made honestly, the book is saturated with the logical non sequitur, irrelevancies, and overgeneralizations sampled in the earlier section of this essay.

Guilt by Association and Personal Attacks

Physics does not claim that string theory is true, though many physicists do. Chemistry does not claim that man-made substances destroy the Earth's ozone layer, though many chemists do. Similarly, one ought to distinguish claims in cryptozoology from claims made by individual cryptozoologists; but Loxton and Prothero pretend that the whole field can be discredited with stories of frauds, hoaxes, incompetence, and mistakes made by individuals.

Even more unwarranted is the persistent denigration of competent people who believe other than Loxton and Prothero. They are dismissed because there are so few of them, and they haven't been "trained at major institutions" (p. 10). But among those who have taken Nessie seriously, even participating in searches at Loch Ness, are Harold Edgerton, inventor of strobe photography, awarded a Medal of Freedom; leading sonar (Martin Klein) and photographic (Charles Wyckoff) experts; Robert Rines, patent attorney with a degree in physics and some relevant patents in his own right; zoologist Denys Tucker of the British Museum of Natural History; biologist Roy Mackal; prominent naturalists Sir Peter Scott and Richard Fitter; Tim Dinsdale, aeronautical engineer. It is far from obvious that the qualifications cited for Prothero (a paleontologist) and Loxton (editor of *Junior Skeptic*, writer for *Skeptic*, with a long-standing "personal love of monster mysteries") make them more qualified to discuss cryptids, let alone the nature of science.

Not Engaging Honestly with the Evidence

Throughout *Abominable Science*, evidence for the reality of specific cryptids is misrepresented. In lieu of engaging the strongest claims, the book resorts to the usual panoply of rhetorical devices, for instance *argumentum ad adjektivum* (a-a-a) (described in Bauer 2013b): when a source favors the views of Loxton and Prothero, it is "respected," "authoritative," "celebrated," etc. (e.g., p. 13). Cryptozoologists and their sources, on the other hand, are "doubtful," "discredited," and the like. The illogic and overgeneralization in this book and its ignorance about science should suffice as a warning not to take seriously anything in the chapters on individual cryptids. Here are just a few points to underscore this general conclusion.

Chapter 2, Bigfoot

"Every animal that lives in these forests [Pacific Northwest] leaves plenty of hard evidence of their existence" (p. 22), therefore Bigfoot doesn't exist.

In support is the fact that John Bindernagel, who happens to believe that Bigfoot *does* exist, twice found skulls of bears during his decades of work as a field biologist. More logically than Loxton, one would say that since Bindernagel only twice found remains of such a common creature as the bear, there is no reason to imagine that he would also have found physical remains of much rarer creatures whose behavior is not understood.

Chapter 3, Yeti

This chapter has some peculiar remarks: That Yeti is “often mis-named the Abominable Snowman” (p. 74)—why is that a misnomer rather than just a colloquial name?

Is it accurate that “*most* pop-culture depictions” show white fur (p. 75, emphasis added)?

It’s asserted that the many names for such creatures show the “legend” to be an amalgam of many different cultural traditions (pp. 75–76): No, it just shows that each language has its own name for these creatures.

This chapter has much interesting historical material, about mountaineering as well as Yeti-seeking, but its >40 pages are almost entirely irrelevant to the question of whether Yetis are real creatures. Seven pages on Gigantopithecus include the improper inference that the fossil record for 300,000 years is so good that it excludes the possible survival of Gigantopithecus descendants.

Chapter 4, Nessie

The chapter on Nessie is disgracefully misleading about the evidence, and a fully detailed and documented critique is on my website⁷. The discussion of sonar evidence is plainly contrary to the facts, and there is gross misrepresentation of the most famous photograph, the Dinsdale film, and the flipper photos, as well as about the size of Loch Ness and how “well-populated” (p. 21) Scotland is.

Loxton even manages to argue against his own case: “it is hard to see why a plesiosaur would be more disruptive [of evolutionary theory] than the continuing existence of crocodiles or sharks, which first appeared about 220 million and 400 million years ago, respectively” (p. 217).

Chapter 5, Sea Serpents

The title of Chapter 5, “The evolution of the sea serpent: From Hippocampus to Cadborosaurus,” describes it well: It is 80 pages of dogmatic just-so story,¹³ with speculation passing for analysis and evidence. At the same time sea serpents are traced back to imagined creatures in antiquity, it is

said that “most cryptids are brand-spanking new” (p. 178). Of course they are: Cryptozoology could not exist until official Science existed, because before that—as Constance Whyte (1957) discussed so cogently for the case of Nessies—humans didn’t make invidious distinctions between authorized and non-authorized creatures.

Plain wrong is the assertion that the “30-foot Cadborosaurus” seen by Loxton’s own parents was “a minnow by sea serpent standards” (p. 180). Heuvelmans’s (1958/1965/1968) treatise is as close to canonical as cryptozoological literature gets, and he suggests 60 feet as the typical upper range, with some types as long as the 100-foot-plus blue whales; and in several places he ascribes greater lengths reported by eyewitnesses to “false extrapolations” (1968:563) or “waves . . . in its wake” (1968:547). So a 30-footer might be a medium-sized adult or an adolescent, but hardly a minnow. This illustrates the perniciously tendentious rhetoric that pervades this book, attempting to make points by choice of adjectives and innuendo in lieu of hard evidence.

Bizarrely wrong is the assertion that “[t]o qualify as sea serpents, creatures must (minimally) . . . look like serpents” (p. 184)—even as in other places Loxton criticizes cryptozoology for their claimed similarity to plesiosaurs. It has long been accepted within cryptozoology that the common name “sea serpent” applies merely to large unidentified creatures reported from the oceans, and which are most definitely *not* serpent-like because they are never reported to move by horizontal undulation.

Non sequitur abounds here too, for instance that because Aristotle in the 4th century BCE could accurately describe whales breathing air, and “[n]o comparable understanding emerged for any sort of sea serpent. . . . [it] suggests that there were no genuine sea serpents for classical informants to observe” (p. 187). With critics who argue in this fashion, cryptozoology hardly needs any supporters; one is reminded of the bon mot that the best argument for the truth of Christianity is the vehement illogic of those who try to debunk it.

The fact that reports of sea serpents became much more frequent after about 1800 is supposed to make this a “pop-culture phenomenon” (p. 212). How about the tremendous increase in traffic on the oceans as empires expanded and increasing numbers of Europeans emigrated to Australia and the Americas?

More non sequitur follows: The fact that “Barclay’s *Halsydrus pontoppidani*”—the name suggested for a carcass found on the isle of Stronsa/Stronsay—turned out to be a rotting basking shark makes it “alongside *Nessiteras rhombopteryx* (proposed for the Loch Ness Monster), *Hydrarchos sillimani* (an alleged fossil sea serpent), and *Cadborosaurus*

willsi as a premature taxonomic misstep" (p. 213). But who has shown that for the last three? After all, *Nessiteras rhombopteryx* was christened in the pages of *Nature*, which together with *Science* represents the ultimate in status and prestige among scientific journals.

Any claim for objectivity in this work is undercut as the book knowingly, willfully, and deliberately¹⁴ fails to discuss two of the very strongest cases. One of them, the Gloucester sightings by innumerable witnesses (O'Neill 2003), is by far the best-documented evidence that sea-serpents exist.

Chapter 6, Mokele Mbembe

Since the evidence for this creature is minimal, Prothero's demonstration of that is largely accurate; but the chapter reveals the bee in the bonnet about creationism and the faulty basis for alleging that cryptozoology has anything to do with it: "Most of the active explorers seeking Mokele Mbembe have a nonscientific agenda: Young Earth creationism" (p. 292). They believe that if there exist living dinosaurs, somehow that supports their case that the Earth is only some 6,000 to 10,000 years old. "Thus the quest . . . is not just an idle search for a cryptid, but part of the effort . . . to overthrow the theory of evolution and undermine the teaching of science by any means possible. As such, it cannot be dismissed or treated lightly" (p. 295).

I think what this shows is the lack of sense of proportion characteristic of "skeptics": Any questioning of anything in contemporary mainstream science is taken as a death threat to science and to civilization as we know it.

The Publisher and the Pundits

The book warrants criticism on technical grounds as well as on its substance. It was cobbled together from material previously published in *Skeptic* and on *Skepticblog.org* and in *Scientific American* (the Foreword), but this is revealed (or hidden?) only in the fine print on the copyright page. That the chapters were written by the authors individually and not jointly is not obvious either, mentioned in the Preface but not in the Table of Contents, so an unwary reader may be taken aback at the frequent first-person singular use in a book by two authors.

It is dismaying that a university press published this book, and that it has already been noted favorably in *Nature* (Cressey 2013), *Discover* (Neckar 2013), *Los Angeles Magazine* (Mansky 2013), *Publishers' Weekly*,¹⁵ *Inside Higher Ed* (McLemee 2013), *National Geographic* (Shea 2013; Switek 2013), *Huffington Post* (Hill 2013), and *The Wall Street Journal* (Wertheim 2013). At Amazon.com, the reviews average out at 4/5, with 20 5-star and 5 1-star ratings. The errors about individual cryptids would not be obvious

to anyone but a cryptozoologist. The ignorance about science affects society generally, not only the personnel at Columbia University Press, their consultants, and those who write book reviews for mainstream media. But the innumerable logical faux pas and the unsupportable generalizations ought to be evident to any careful reader, as should the sheer irrelevance of much of the material—for instance, that creationism is so often dragged in (e.g., pp. 7–8, 10–12, 216, and 224).

Apparently the reviewers accepted as factual all the assertions made in the book; thus Sharon Hill (2013) at the *Huffington Post* was impressed that the book is “chock-full of fine scholarship with references to original sources.” Evidently, she didn’t check the sources to discover that the book misrepresents a large proportion of them.

Brian Switek (2013) on the *National Geographic* blog paraphrases the book without doubting its validity: “The cryptozoologists never asked the question, ‘Well, how did the monster get in the lake if the lake was completely under ice, the lakes are all landlocked, and there’s no way for a marine creature to get there at all?’” That question was answered at length half a century ago: As the ice melted, Loch Ness became part of the oceans. Then, as geologists know, the land rose because it was now free of the heavy weight of ice, and gradually the lake was cut off permanently from the North Sea. Nessies would have become slowly acclimatized to fresh water, as other marine creatures have done in various parts of the world (Whyte 1957).

Margaret Wertheim (2013) in *The Wall Street Journal* manages at least to note the absurdity of the book’s claim that cryptozoology is a threat to mainstream science, pronouncing the evidence for that “weak.” It bears pointing out that this is a driving motive for many self-styled skeptics: They regard any questioning of contemporary science as a threat to it. Far from being a threat, cryptozoology can actually stimulate interest in science and can have beneficial side-effects as well (Bauer 2002). Perfectly respectable work has been carried out under the rubric of cryptozoology (Naish 2012).

Summing Up the Book

Abominable Science is superbly presented in expensive, heavyweight glossy paper with much color illustration, but it is appallingly ignorant about the matters it chooses to discuss. I hope it is only coincidental that it was also Columbia University Press that published Nicoli Nattrass’s (2012) misguided (Bauer 2012b) book about AIDS.

“It is common for skeptics to have to state the obvious: The world is not obligated to accept anyone’s personal claims or speculations” (p. 256). *Abominable Science* enshrines the authors’ personal claims and speculations

and gives short shrift to cryptozoology and the evidence for the particular cryptids mentioned in the book. No reader should feel obligated to accept anything said in the book; rather they should be warned against doing so.

HENRY H. BAUER

Professor Emeritus of Chemistry & Science Studies, Dean Emeritus of Arts & Sciences
Virginia Polytechnic Institute & State University
hhbauer@vt.edu, www.henryhbauer.homestead.com

Notes

- ¹ Daniel Perez, September 1, 2013; <http://is.gd/7SqTDt>
- ² Bill Munns, Hypocrisy, August 8, 2013; <http://is.gd/7SqTDt>
- ³ R. Watson, Not all it appears to be, September 10, 2013; <http://is.gd/7SqTDt>
- ⁴ <http://www.skepticblog.org/2013/09/12/breaking-down-a-criticism-of-abominable-science>
- ⁵ <http://www.skepticblog.org/2013/09/05/bigfoot-times-denounces-abominable-science>
- ⁶ Citations to all reviews of my books are in my CV at: <http://henryhbauer.homestead.com/VITA.pdf>
- ⁷ The book's errors in this and about Loch Ness generally are detailed in "'Skeptical' misinformation about Nessie: A critique of *Nessie, The Loch Ness Monster* by Daniel Loxton, Chapter 4 in *Abominable Science* (Columbia University Press, 2013)"; http://henryhbauer.homestead.com/_NessieChapter.pdf
- ⁸ See, for example, hivskeptic.wordpress.com and links listed there.
- ⁹ The known unknown comprises the already recognized gaps in current knowledge; the unknown unknown contains entirely unsuspected matters that periodically come to light and stimulate scientific revolutions.
- ¹⁰ http://en.wikipedia.org/wiki/Karl_Shuker
- ¹¹ http://en.wikipedia.org/wiki/Loren_Coleman
- ¹² <http://cryptozoologymuseum.com>
- ¹³ The Wikipedia description is correct: "a just-so story, also called an *ad hoc* fallacy, is an unverifiable and unfalsifiable narrative explanation." The phrase *just-so story* is taken from Kipling (1902).
- ¹⁴ <http://mattbille.blogspot.ca/2013/08/book-review-abominable-science.html>
- ¹⁵ <http://www.publishersweekly.com/978-0-231-15320-1>

References

- Bauer, H. H. (1984). *Beyond Velikovsky: The History of a Public Controversy*. Urbana & Chicago, IL: University of Illinois Press.

- Bauer, H. H. (1986). *The Enigma of Loch Ness: Making Sense of a Mystery*. Urbana & Chicago, IL: University of Illinois Press.
- Bauer, H. H. (1992). *Scientific Literacy and Myth of the Scientific Method*. Urbana & Chicago, IL: University of Illinois Press.
- Bauer, H. H. (2001a). *Fatal Attractions: The Troubles with Science*. New York: Paraview Press.
- Bauer, H. H. (2001b). *Science or Pseudoscience: Magnetic Healing, Psychic Phenomena, and Other Heterodoxies*. Urbana & Chicago, IL: University of Illinois Press.
- Bauer, H. H. (2002). Preface, pp. xxi–xxii, in Eberhart (2002).
- Bauer, H. H. (2007). *The Origin, Persistence and Failings of HIV/AIDS Theory*. Jefferson, NC: McFarland.
- Bauer, H. H. (2012a). *Dogmatism in Science and Medicine: How Dominant Theories Monopolize Research and Stifle the Search for Truth*. Jefferson, NC: McFarland.
- Bauer, H. H. (2012b). Review of Nattrass (2012). *Journal of Scientific Exploration*, 26, 793–799.
- Bauer, H. H. (2013a). Peer review and consensus [Scientific literacy, lesson 2]. 4 January; <http://wp.me/p2VG42-R>
- Bauer, H. H. (2013b). Not even wrong about science and politics [book review]. *Journal of Scientific Exploration*, 27, 546–558.
- Bayanov, D. (1982). A note on folklore in hominology. *Cryptozoology*, 1, 46–48.
- Bindernagel, J. A. (2010). *The Discovery of the Sasquatch: Reconciling Culture, History, and Science in the Discovery Process*. Courtenay, British Columbia, Canada: Beachcomber Books.
- Coleman, L., & Clark, J. (1999). *Cryptozoology A to Z: The Encyclopedia of Loch Monstres, Sasquatch, Chupacabras, and Other Authentic Mysteries of Nature*. New York: Fireside (Simon & Schuster).
- Cressey, D. (2013). Beastly fakes. *Nature*, 499, 406.
- Dinsdale, A. (2013). *The Man Who Filmed Nessie: Tim Dinsdale and the Enigma of Loch Ness*. Blaine, WA: Hancock House.
- Eberhart, G. M. (2002). *Mysterious Creatures: A Guide to Cryptozoology*. Santa Barbara, CA: ABC-CLIO.
- Goldacre, B. (2012). *Bad Pharma: How Drug Companies Mislead Doctors and Harm Patients*. London: Fourth Estate; USA edition, New York: Faber & Faber (2013).
- Goodstein, D. (1992). Rangings of the mind. *Science*, 256, 1034–1035.
- Greenwell, J. R. (1985). A classificatory system for cryptozoology. *Cryptozoology*, 4, 1–14.
- Heuvelmans, B. (1958/1965/1968). *Dans le sillage de monstres marins: Le kraken et la poulpe colossal* (1958); *Le grand serpent-de-mer* (1965). Both Paris: Librairie Plon; *In the Wake of the Sea-Serpents* (1968). New York: Hill & Wang.
- Hill, S. (2013). Cryptozoology gets respect while bigfooters behave badly. *Huffington Post*, 11 September.
- Horton, R. (2003). *Health Wars: On the Global Front Lines of Modern Medicine*. New York: New York Review of Books. p. 306.
- Kipling, R. (1902). *Just So Stories*. London: Macmillan (and many later editions).
- Lakatos, I. (1976). History of science and its rational reconstruction. In *Method and Appraisal in the Physical Sciences*, edited by Colin Howson, Cambridge, UK: Cambridge University Press, pp. 1–40.
- Leiter, L. D. (2002). The pathology of organized skepticism. *Journal of Scientific Exploration*, 16, 125–8.
- Mansky, J. (2013). Decrypting cryptozoology: The science & pseudoscience of mythical creatures —New book 'Abominable Science!' separates fact from fiction. *Los Angeles Magazine*, <http://www.lamag.com/laculture/culturefilesblog/2013/08/07/decrypting-cryptozoology-the-science-pseudoscience-of-mythical-creatures>
- McLemee, S. (2013). MonsterQuest. *Inside Higher Ed*, 4 September; <http://www.insidehighered.com/views/2013/09/04/review-daniel-loxton-and-donald-r-prothero-abominable-science-and-joseph-nigg-sea>

- Merton, R. K. (1942). Science and technology in a democratic order. *Journal of Legal and Political Sociology*, 1, 115–126; reprinted as “The normative structure of science”, in *The Sociology of Science: Theoretical and Empirical Investigations*, Chicago: University of Chicago Press (1973), pp. 267–278.
- Naish, D. (2012). The inaugural issue of *The Journal of Cryptozoology*. *Scientific American (Tetrapod Zoology blog)*, 22 December; <http://blogs.scientificamerican.com/tetrapod-zoology/2012/12/22/inaugural-issue-of-journal-of-cryptozoology>
- Natrass, N. (2012). *The AIDS Conspiracy: Science Fights Back*. New York: Columbia University Press.
- Neckar, E. (2013). Hot books in September. *Discover*, September.
- Newton, M. (2005). *Encyclopedia of Cryptozoology: A Global Guide to Hidden Animals and Their Pursuers*. Jefferson, NC: McFarland.
- O'Neill, J. P. (2003). *The Great New England Sea Serpent: An Account of Unknown Creatures Sighted by Many Respectable Persons Between 1638 and the Present Day*. New York: Paraview.
- Shea, R. H. (2013). The science behind Bigfoot and other monsters. *National Geographic*, September 9.
- Switek, B. (2013). Laelaps: Our very own monsters. August 4; <http://phenomena.nationalgeographic.com/2013/08/04/our-very-own-monsters>
- Truzzi, M. (1987). On pseudo-skepticism. *Zetetic Scholar*, 12/13, 3–4.
- Wertheim, M. (2013). *Wall Street Journal*, August 30.
- Whyte, C. (1957). *More Than a Legend: The Story of the Loch Ness Monster*. London: Hamish Hamilton.
- Ziman, J. (1978). *Reliable Knowledge: An Exploration of the Grounds for Belief in Science*. Cambridge, UK: Cambridge University Press. p. 40.

Copyright of Journal of Scientific Exploration is the property of Journal of Scientific Exploration and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.